



AIRCOOL VENTILATORS



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Passivent Aircool is a range of controllable ventilators primarily for installation in external facades in commercial and similar buildings.

They have been specifically designed to meet the latest building regulations, and aimed at providing sustainable solutions.

The electrically-actuated louvres provide controlled air intake and extract in natural (passive) ventilation systems, and may also be used for air intake or extract in mechanical ventilation systems.

They are particularly suitable for night cooling strategies, where daytime heat build-up is dissipated from the structure during the night, producing lower internal air temperatures with a reduced need for daytime cooling or air conditioning.

Natural ventilation methods can save energy, reduce greenhouse gas emissions, and reduce or eliminate the capital and running costs of ventilation or air conditioning plant.

Quality assurance

Appraised under BS EN ISO 9001 which covers design, development, manufacture, and installation (if by approved installers), giving an independently audited and maintained assurance that the products will meet their intended purpose.

Sustainability assurance

All Passivent manufacturing is accredited to ISO 14001, the international standard for environmental management systems. Passivent are committed to minimising our impact on the environment using recycled and recyclable materials where possible.

FEATURES & BENEFITS

- Primary construction materials are aluminium and ABS, which are 100% recyclable.
- Electrically-actuated low-voltage louvres provide optimum safety and flexibility, with virtually silent modulating operation.
- Can be installed in masonry walls, curtain walling, window frames or profiled sheet cladding.
- Insulated internal louvres provide a U-value of down to 1.1W/m²K when closed, to minimise heat loss.
- Excellent air-tightness performance when closed.
- Can be supplied in modular form to provide greater flexibility in use (see Other Applications).
- Excellent weather protection and security are provided by the external weather louvre, even when the internal insulated louvre is open.
- Thermally broken frame, and insulated and orientated louvres minimise the risk of nuisance condensation and draughts.
- Thermal Aircool option available with internal heating coil to warm the supply air during cooler weather.
- Acoustic versions available to reduce noise transmission.
- Discreet and functional yet aesthetically pleasing, with internal protection cover grille supplied as standard.
- The internal cover grille protects against impact damage, for applications such as gymnasiums or sports halls.
- Ventilation design service available.

DESCRIPTION

Composition, manufacture

Frame and external weather louvres are extruded aluminium, with ABS thermal break.

Internal motorised louvres are fabricated from a double skin of aluminium with ABS thermal break and blade compression seals; supplied as a complete assembly including the actuator. Removable aluminium actuator cover for ease of maintenance.

Insect screen is 4mm black polypropylene.

Internal cover grille is fabricated from extruded aluminium.

External weather louvres can be provided with additional blade supports to resist vandal attack.

Sizes

Made to order in the size ranges shown below.

Aircool wall vents: heights 255 up to 1490mm; lengths 460 up to 2035mm.

Designed to suit brick module sizes. Wall thickness from 190mm upwards; specify when ordering.

Aircool window/curtain wall vents: heights 255 up to 1480mm; lengths 400 up to 2000mm; to suit glazing thickness from 24mm. Depth front to back (including cover grille) 180mm plus glazing thickness.

Please enquire for specific size availability.

Appearance

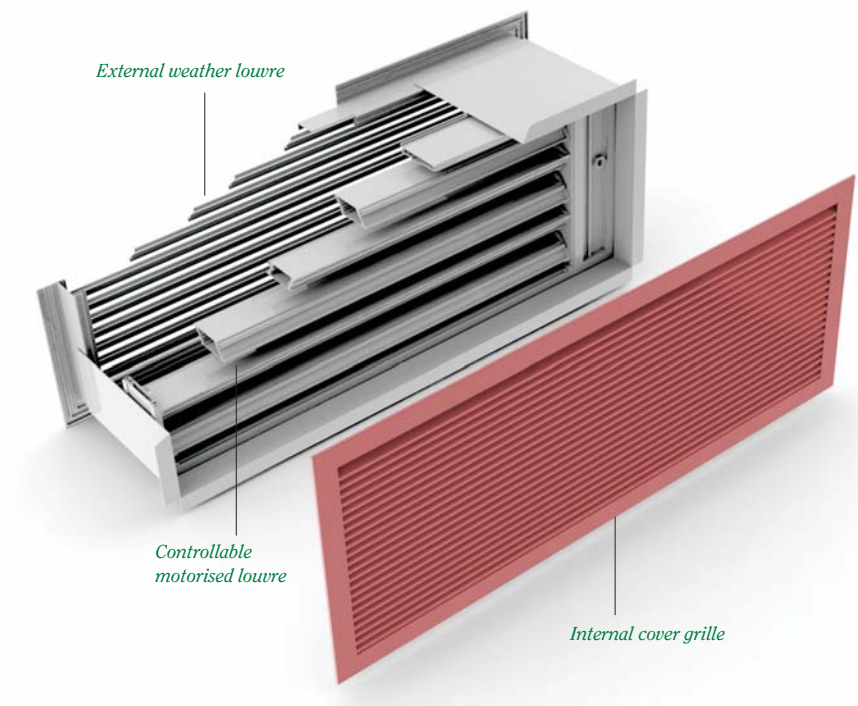
External louvres and frame can be polyester powder coated to order.

Internal cover grille can be polyester powder coated to order.

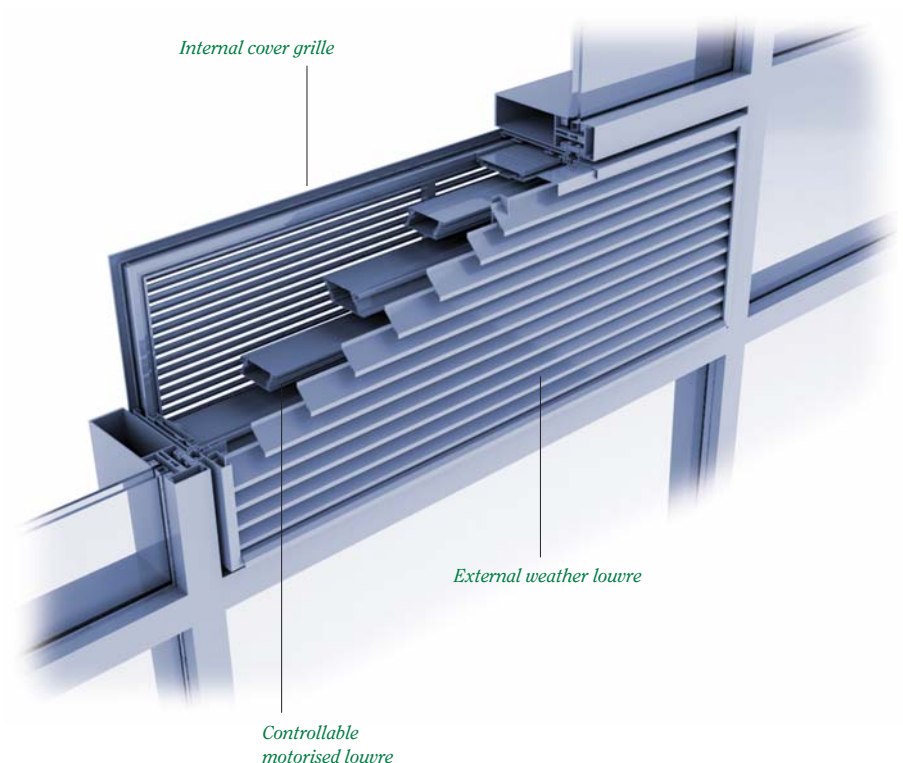
Internal motorised louvres are mill finish aluminium (can be colour coated to order).

Acoustic ventilators: external and internal hoods can be colour coated to order.

Aircool wall ventilator for masonry wall viewed from inside



Aircool window ventilator for window/curtain walling viewed from outside



AIRCOOL VENTILATORS



PERFORMANCE

Ventilator performance

Passivent will advise on the number and size of ventilators needed according to air flow volume required (see Services, back cover).

Fire performance

Materials used for internal frame and louvres when closed achieve a Class 1 rating when tested to BS 476: Part 7: 1987.

Weather performance

The external louvres provide 98.6% rain rejection when independently tested at BSRIA to BS EN 13030: 2001.

When tested to BS 6375: Part 1: 1989 the closed ventilators are watertight at over 1000Pa pressure, thus meeting the requirement of the standard for unrestricted use (ventilator to be watertight at 300Pa minimum).

Air leakage performance

When tested to BS 6375: Part 1: 1989 the air leakage rate of the closed ventilators is 0.57 m³/hour/m at 50Pa pressure. The linear metre length is defined as the perimeter of the unit plus the total length of the louvre-to-louvre contact. This equates to an approximate value in terms of face area of 9.7m³/hour/m² at 50Pa pressure (depending on unit size).

Thermal insulation

Average calculated U-value of the ventilators is 1.6W/m²K when closed in ceiling applications and 1.1W/m²K in wall applications.

Controls and sensors

Ventilation airflow is continuously variable by 24V modulating actuators.

Ventilators can be controlled by Passivent's range of thermostatic controls or programmable controllers, or linked to a building energy management system.

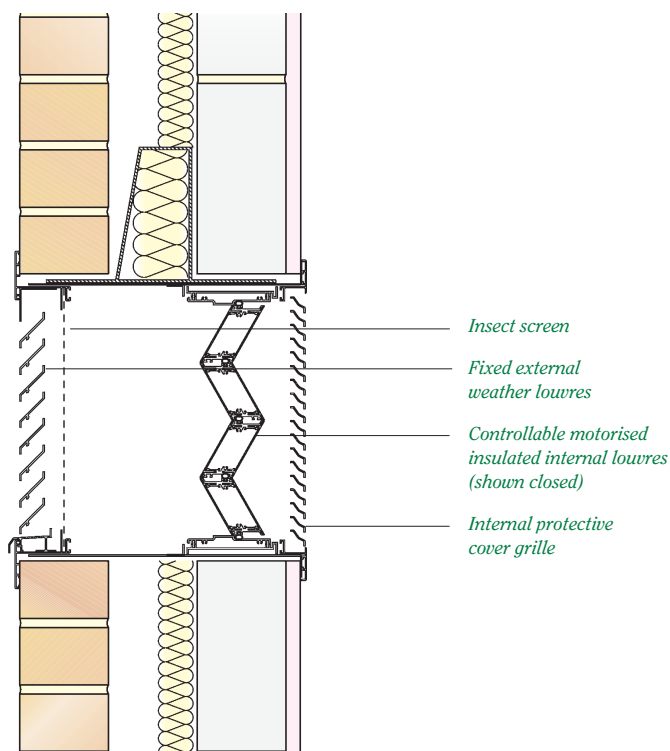
Passivent also offer a range of control sensors including temperature, CO₂, humidity, and wind for exposed locations.

Modular applications

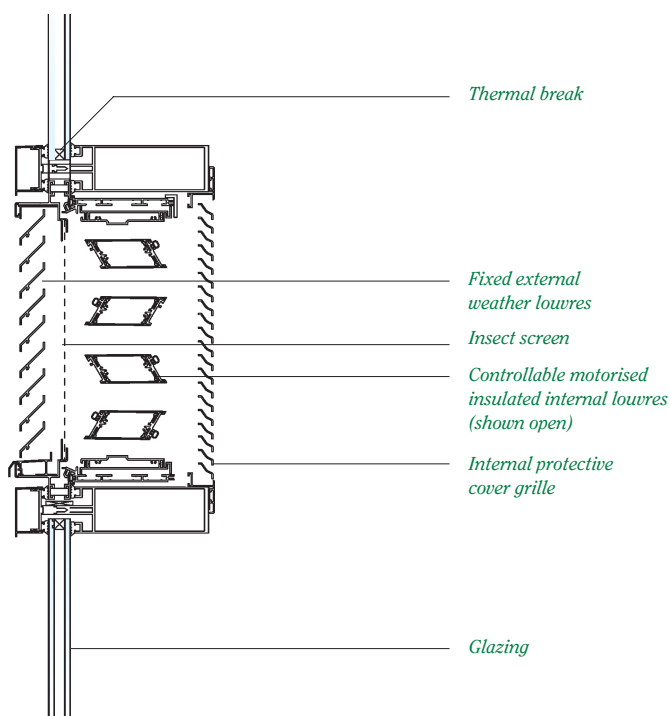
Aircool ventilators can also be supplied in modular form, see page 10.

Complete Aircool units in masonry walls and windows/curtain walling

Aircool wall ventilator in masonry wall



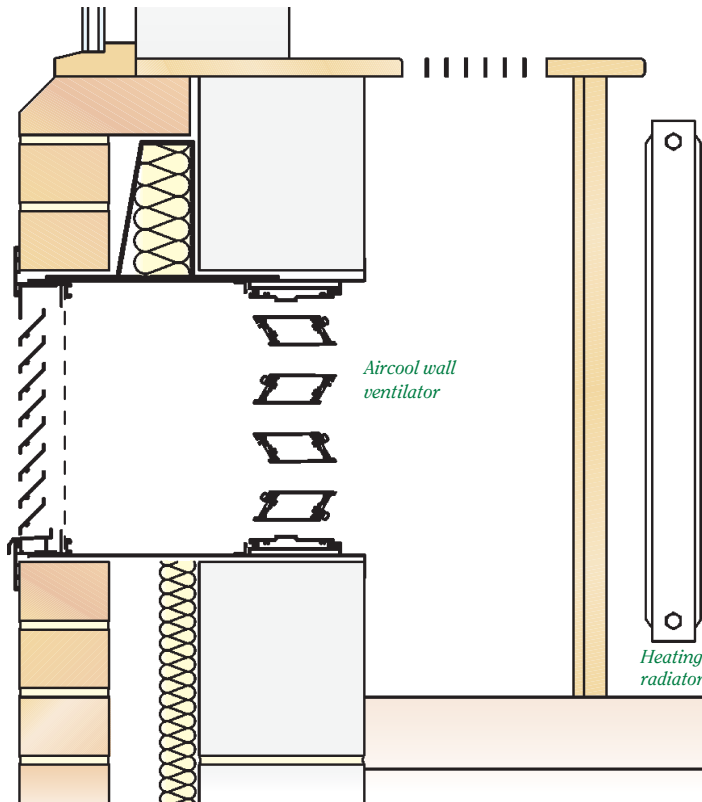
Aircool window ventilator in curtain walling



STANDARD APPLICATIONS

Aircool wall ventilator behind dry lining

Aircool wall ventilator below a window and behind dry lining providing fresh air supply to the occupied space through window sill mounted transfer grille. A degree of acoustic attenuation is also provided via this void.

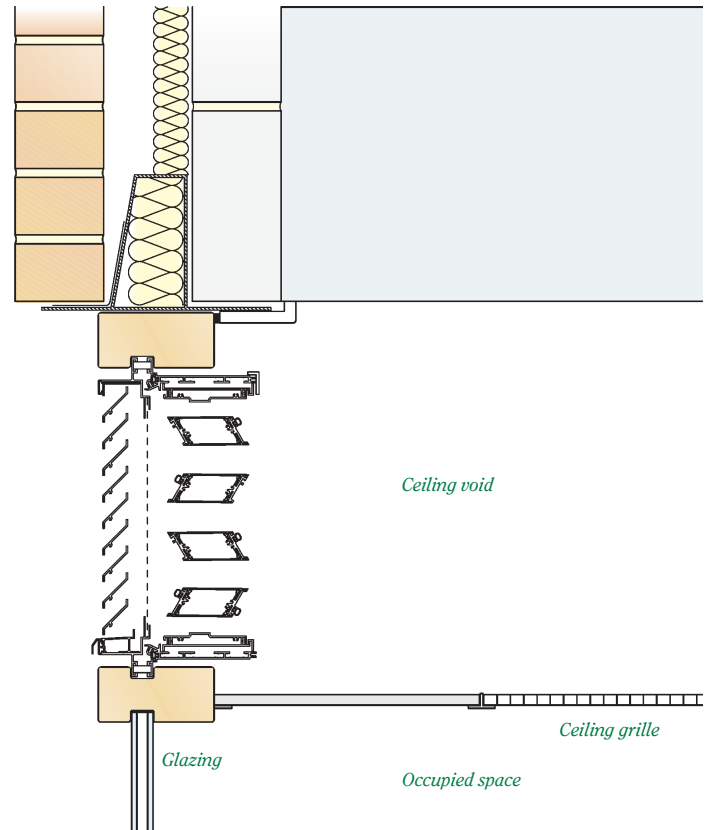


Fresh air intake above suspended ceiling

Aircool window ventilator above a suspended ceiling, discreetly abutting the window transom, provides fresh air supply to the occupied space through ceiling grilles. Summertime night cooling of the intermediate concrete floor slab above is achieved, and tempering of the incoming air in winter.

A degree of acoustic attenuation is also provided via the ceiling void.

In this application the internal cover grille is not usually required.



ACOUSTIC AIRCOOL



Acoustic ventilator

The Aircool acoustic ventilator range is available in wall and window versions.

The range has been developed to meet increased regulation requirements for sound reduction, and the increased noise exposure resulting from the greater use of brownfield sites.

Passivent have the detailed understanding of component performance in sound reduction and air transfer resistance needed to design natural ventilation solutions for noisy locations.

Independent test data to BS EN 20140-10: 1992 is available on request, with detailed performance figures for each application.

Depending on requirements, acoustic ventilators may have a single or double row of internal acoustic chevrons, acoustic liners, or ABS acoustic hoods on external and internal faces.

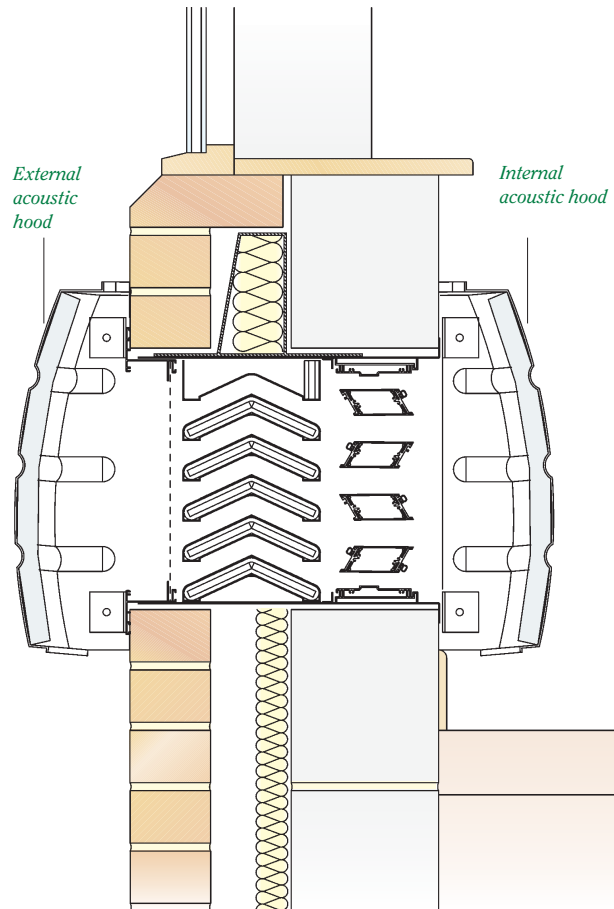
Ducted fresh air entry or room-to-corridor air transfer applications can be provided with acoustic noise reduction. Aircool insulated motorised louvres also provide visible airflow control, often important to the user.

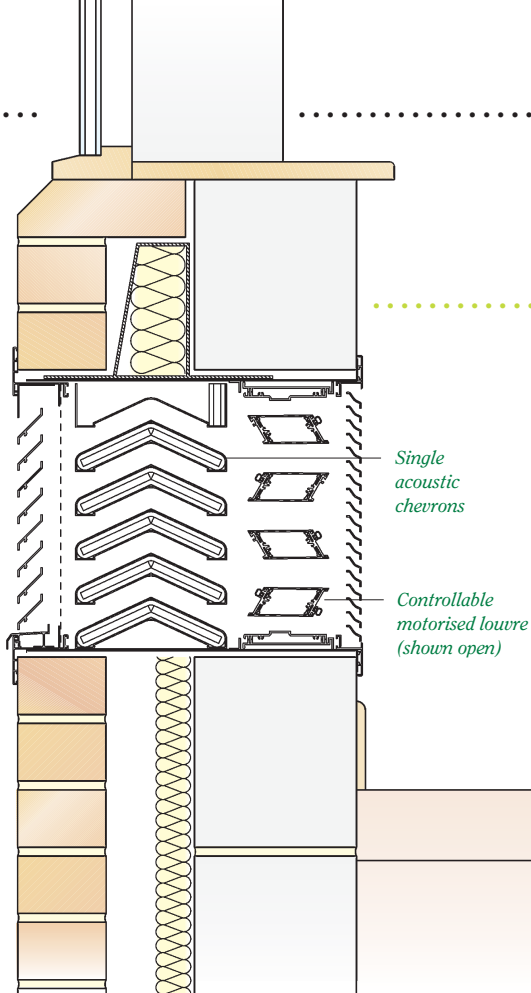
For special high noise reduction requirements, Passivent can design and manufacture bespoke ventilators to maximise sound reduction and minimise airflow resistance so as to achieve target air change rates.

Passivent Aircool acoustic façade ventilators can be complemented by Passivent acoustic Airstrat and Airscoop roof-mounted ventilators. This broader product range provides designers with the opportunity to adopt complete natural ventilation solutions where buildings have high external noise levels.

Aircool acoustic wall ventilator with hoods

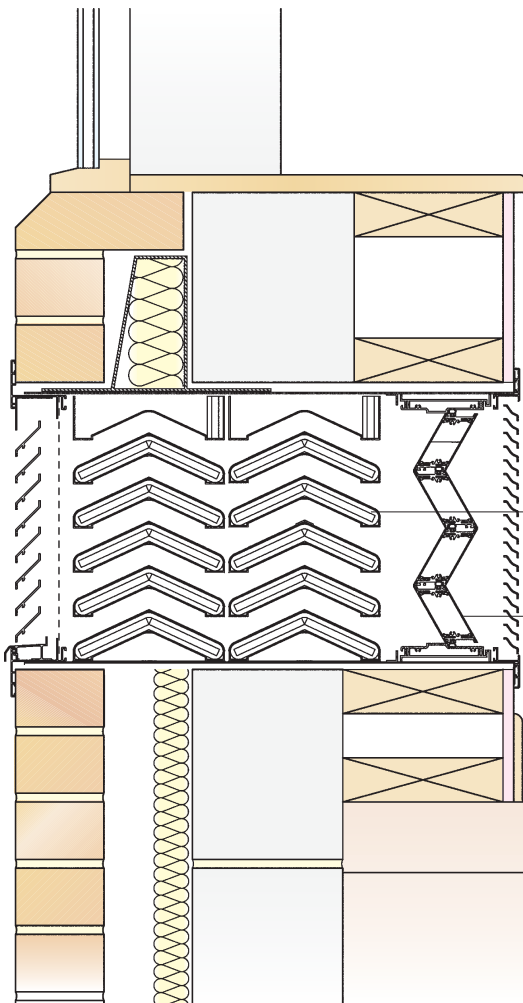
Aircool acoustic wall ventilator 797 x 315 x 265mm, with colour-matched external and internal noise reduction hoods and single acoustic chevrons, providing a weighted normalised sound level difference $D_{n,e,w}$ of 30dB (when open).





Aircool acoustic wall ventilator with single acoustic chevrons

Aircool acoustic wall ventilator
797 x 315 x 330mm, with external weather louvre and single internal acoustic chevrons, providing a weighted normalised sound level difference $D_{n,e,w}$ of 22dB (when open).



Aircool acoustic wall ventilator with double acoustic chevrons

Aircool acoustic wall ventilator
797 x 315 x 330mm, with external weather louvre and double internal acoustic chevrons, providing a weighted normalised sound level difference $D_{n,e,w}$ of 26dB (when open).

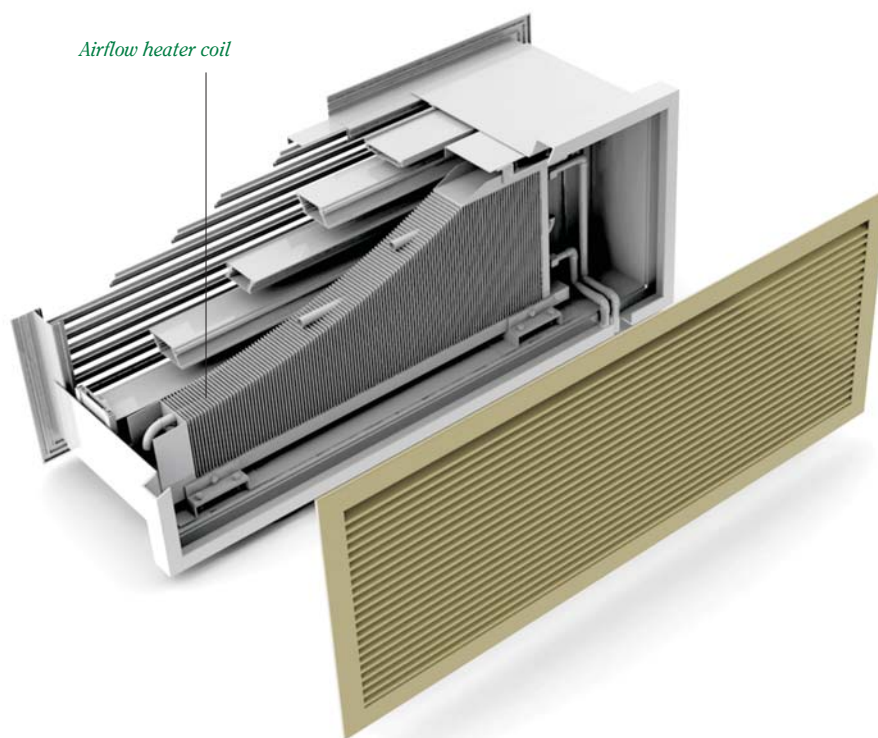
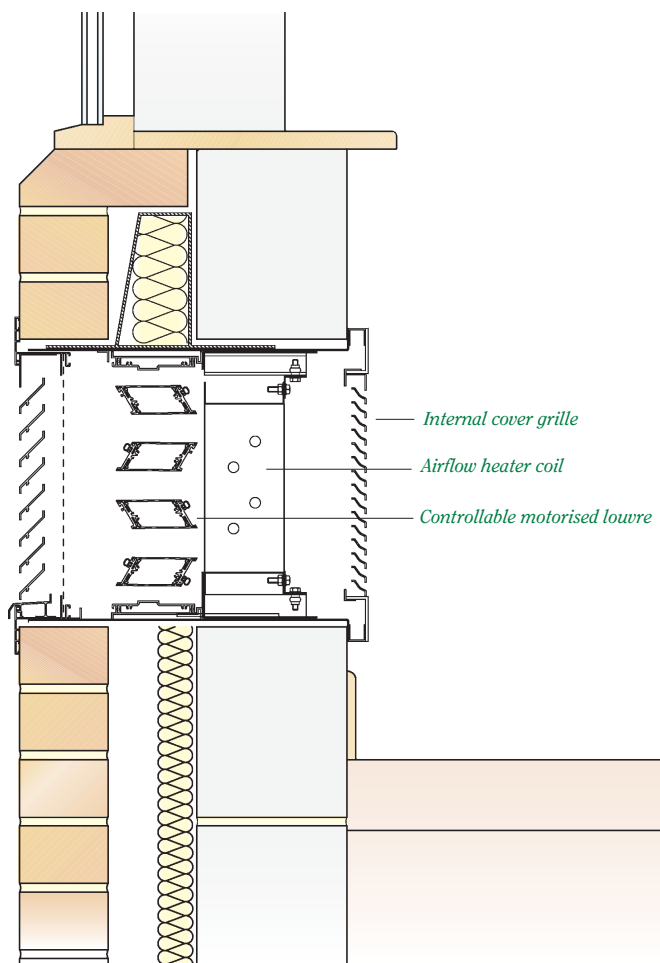
THERMAL AIRCOOL

Thermal Aircool

The Passivent Thermal Aircool has been specifically designed to supply buildings with warm, fresh air during cooler weather. It also provides a fresh air inlet in warmer conditions, when air warming is not required. Thus the unit will provide fresh air ventilation throughout the year and a secure night cooling strategy in warmer weather.

The Thermal Aircool system includes a low resistance airflow heater coil, which has been specially designed for natural ventilation systems. The overall Cd value is 0.36, resulting in high ventilation rates.

A temperature sensor in the unit precisely controls the heater coil. Combined with the Passivent range of natural ventilation controllers, this ensures the correct level of ventilation is supplied at the required temperature.



PASSIVENT AIRCOOL: A CASE STUDY

A £10m development aimed specifically at creating a total business environment for the knowledge-based industry is adopting a natural approach to its build technology.

Phase 4 of the Tamar Science Park - which aims once complete to be the most outstanding science park in the UK, and is currently the only development of its type in the South West - will provide an additional 120,000 sq ft of accommodation to support new and developing business. Stage 1 of the phase incorporates four new two- and three-storey buildings providing flexible office and research accommodation, all of which optimise sustainable strategies.

Central to the sustainability is Passivent natural ventilation. Passivent Aircool ventilator units activate as programmed to draw in replacement air, and exhaust the warm, used air from within. The system primarily uses natural variations in air temperature and movement to function, whereby warm air rises, thereby operating 24/7 and ensuring a comfortable internal ambient temperature is maintained round the clock. Exposed slabwork on the façade further contributes towards the night cooling strategy. Extensive use of glazing optimises natural daylight within, whilst solar shading across the exteriors help reduce solar heat gain.

Elaborated Alex Lammie, lead architect for the project at LHC Architecture, "We satisfied environmental pressures by maximising the architectural design and use

of available technology to optimise and control natural energy sources such as natural ventilation and natural light."

The two two-storey buildings feature a combination of window and wall Aircool ventilators, whilst the two three-storey buildings utilise window Aircool units only to ventilate the internal space: in total 176 window Aircools and 32 wall Aircools with modulating actuators have been installed.

The warmer internal air rises and is extracted through higher level Aircools. Cooler, replacement air is drawn in from outside by lower level Aircool units. Modulating actuators allow room occupants to adjust internal ventilation flow as required. Using just 1 watt of electricity to activate the ventilation louvres, the Aircool units can be minutely adjusted to control airflow requirements taking into account the weather outside - the speed and direction of wind, rain, temperature - and the location of the units within the building facade, to ensure a gentle flow of fresh air into the building without draughts. The units can be controlled individually or linked to an overall ventilation control or building management system.

Thermally broken and insulated, the units are as thermally efficient when closed as a standard double glazed window, thanks to a controllable damper that combines a unique profile with highly reflective strip inserts.



OTHER APPLICATIONS

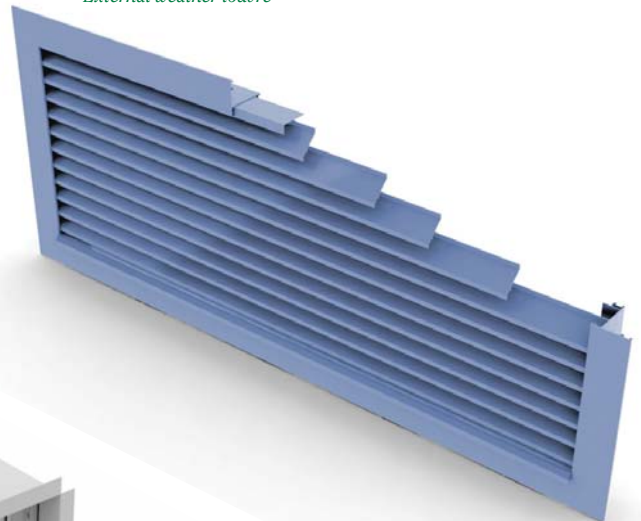


Sidcot School - showing external weather louvres separated from internal controllable louvres and cover grille.

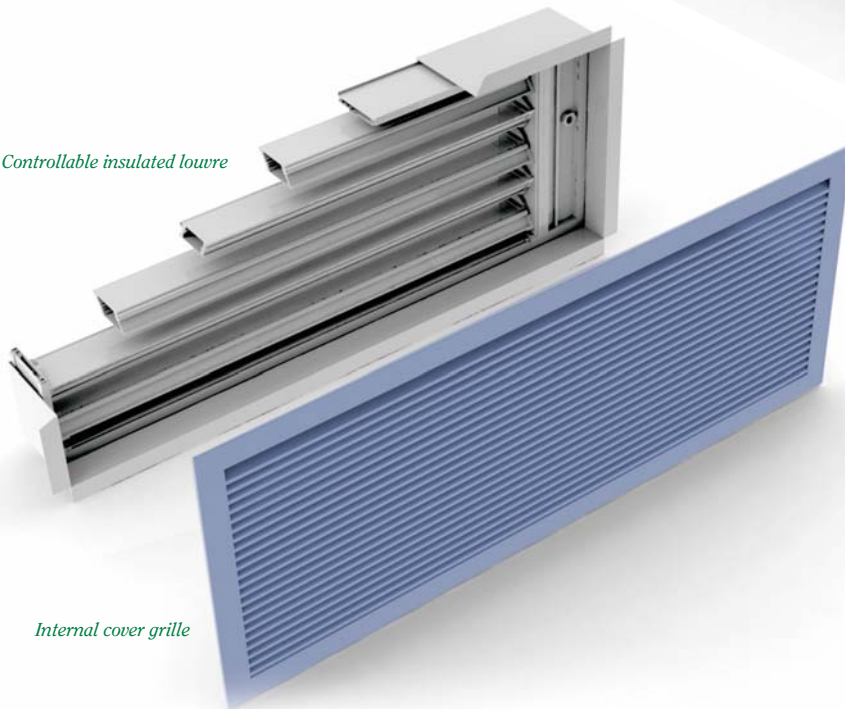
MODULAR APPLICATIONS

Aircool ventilators can also be supplied in modular form, with the external weather louvres, internal controllable louvres and internal cover grilles as separate components, providing extra flexibility in ventilation design.

External weather louvre



Controllable insulated louvre



Internal cover grille

Passive stack ventilation

This design using passive stack ventilation was successfully adopted in a multi-storey building to meet fire regulations and reduce risk of 'cross talk' (ie sound leakage between floors).

Natural ventilation is achieved by passive induced cross ventilation. Fresh air is introduced at the windows and drawn across rooms, then through Aircool motorised internal louvres, and extracted at high level through Aircool window ventilators located at the top of the light well/stack.

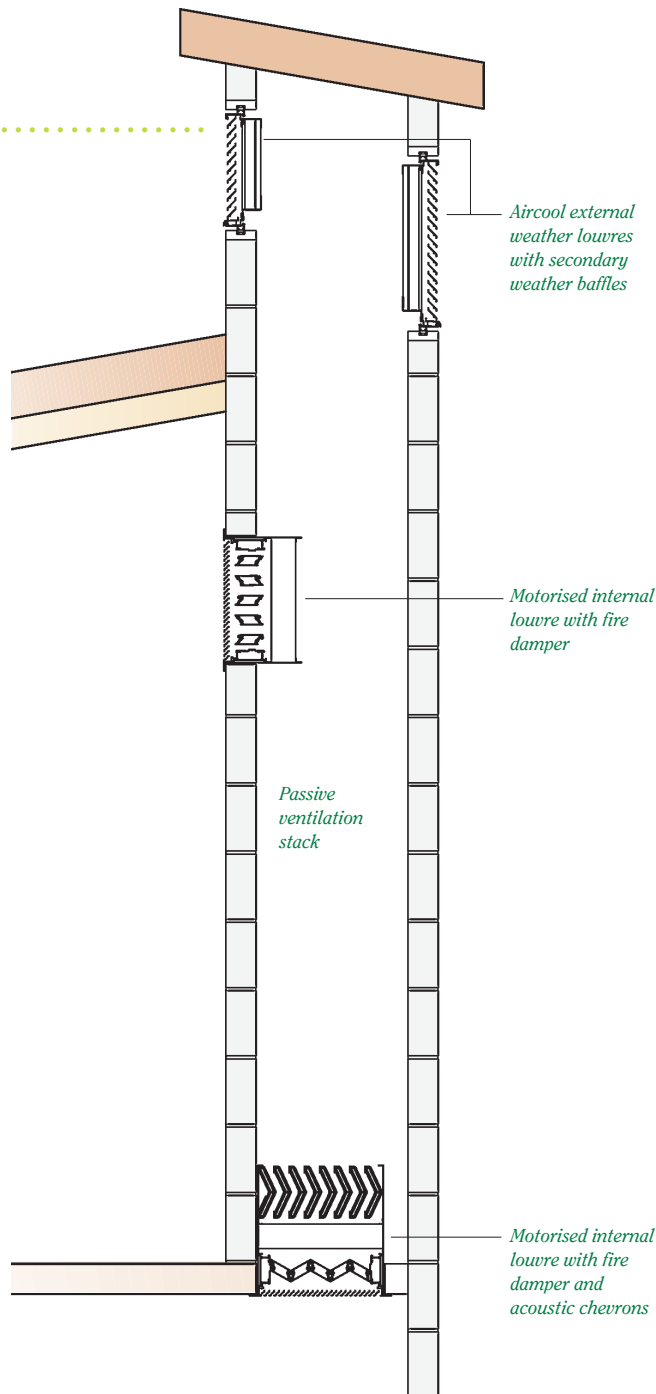
Aircool motorised insulated louvres with fire dampers should be used to maintain the integrity of fire protection between floors.

Acoustic chevrons to the louvres provide acoustic attenuation between floors.

Aircool motorised louvres positioned in the rooms give the users controllability with individual room air volume control, and provide thermal insulation during unoccupied periods.

In exposed locations separation of the ventilator components can reduce the weather rejection performance compared to the combined unit. In this case Passivent patented secondary weather baffles are fitted behind the external weather louvres to provide a Class A weather rejection performance at up to 1.5m/s inlet velocity.

Aircool extracts can be located in high level window frames, behind weather louvres, within a terminal arrangement or in purpose-designed parapet walls.



Specification clause

Standard

Aircool louvre ventilators for masonry walls/windows/curtain walls* having extruded aluminium frame with ABS thermal break, extruded aluminium external weather louvres, 4mm black polypropylene insect screen, and aluminium internal cover grille. Insulated internal motorised controllable louvres fabricated from double skin of aluminium with ABS thermal break and blade compression seals.

Acoustic

Aircool acoustic louvre ventilators to have in addition single/double acoustic chevrons / acoustic liners / ABS external and internal acoustic hoods*. Weighted normalised sound level difference $D_{n,e,w}$ across the acoustic ventilator to bedB to BS EN 20140-10: 1992.

General

Ventilator U-value 1.6W/m²K when closed. 24V actuator for internal louvres controlled by ETC/EDC* wall-mounted switch-gear. Ventilators designed and manufactured under BS EN ISO 9001, and supplied by Passivent Limited, North Frith Oasts, Ashes Lane, Hadlow, Kent TN11 9QU
Tel: 01732 850770,
Fax: 01732 850949,
Email: projects@passivent.com (and installed by an approved installer).
*Delete as applicable.



FURTHER INFORMATION



Services

Passivent has its own in-house research team dedicated to developing techniques and products for natural ventilation, and is a leading partner in some of the most important research projects in this field including NatVent™, a consortium of European organisations headed by BRE.

We offer a comprehensive design and advisory service tailored to your specific project, covering both natural ventilation design and product selection. Advanced software based on CIBSE AM10 is used to calculate sizes of air inlets and outlets to achieve optimum performance.

Names of approved installers can be provided on request.

Other products

Passivent market a range of other natural ventilation and daylighting products including:

High capacity ventilation terminals

Airscoop displacement ventilation terminals

Natural and assisted domestic ventilation systems

ETC and EDC operating control systems

Fresh wall ventilators

Tricklevent window ventilators

Sunscoop Tubular and Metro Modular

Rooflights

<http://pitrehavalandirma.com/havalandirma-bacasi/>

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Passivent Limited maintains a policy of continuous development and reserves the right to amend product specifications without notice.

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